CP-1 Nomination
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SDMS DOCID # 1148139

NOMINATION:

CAMERON AML PROJECT No. 1

COPY

NOMINATION FOR 1993
NATIONAL ABANDONED MINE LAND RECLAMATION AWARD

Submitted By:
NAVAJO ABANDONED MINE LANDS RECLAMATION DEPARTMENT
TUBA CITY FIELD OFFICE
THE NAVAJO NATION

NOMINATION OF ABANDONED MINE LAND RECLAMATION PROJECT
CAMERON AML PROJECT No.1

PROJECT/LOCATION:

Project Name: Cameron AML Project No. 1
Location: The six abandoned mines in this project are located in an area between 16 miles north of and 6 miles southeast of Cameron, in the northwestern portion of the Navajo Nation, Coconino County, Arizona. Geo-politically, the project is located within the Bodaway/Gap, Cameron and Coalmine Chapters and in Western Navajo Agency Grazing District 3. The mines are located in the following Township and Ranges (Gila and Salt River Meridian): T28N, R9E; T29N, R9E; and T30N, R9E. Four of the mines in the project are located along U.S. 89 and the two remaining are accessible via U.S. 89 and then Indian Route 6730.

ENTITIES INVOLVED IN RECLAMATION PROJECT:

Project Development and Administration:

Navajo Abandoned Mine Land Reclamation Department

P.O. Box
Window Rock, AZ 86515
Phone No.: (602) 871-7597
Fax No.: (602) 871-7595
Bernadine Martin, Director
S. Deb Misra, Project Engineer

Tuba City Field Office
P.O. Box 730
Tuba City, AZ 86045
Phone No.: (602) 283-4845 or 4847
Fax No.: (602) 283-5765
Raymond Tsingine, Office Manager
Tony Robbins, Project Coordinator

Contractor:

The Calvin Corporation
P.O. Box 1249
St. Michael, AZ 86511
Phone No.: (602) 871-5797
Fax No.: (602) 871-3510
Raymond L. Lancer, Owner
William Wisner, Project Manager
Claude R. (Dusty) Garrett, Superintendent

ENTITIES INVOLVED IN RECLAMATION PROJECT (Continued):

Paleontological Salvaging and Monitoring:

Museum of Northern Arizona
Route 4, Box 720
Flagstaff, AZ 86001
Phone No.: (602) 774-5211
Fax No.: (602) 779-1527
Jerry Obrzut, Manager
Michael Morales, Head, Geology Dept.
Randy E. Kirby, Geologist/Paleontologist
Patty Rubick Luttrell, Geologist/Paleontologist

AWARD CATEGORY:

Category 1: Exemplary reclamation of land and water resources adversely affected by abandoned mine problems.

PERSON SUBMITTING NOMINATION:

Raymond Tsingine
Reclamation Specialist III
P.O. Box 730
Tuba City, Az 86045
Phone No.: (602) 283-4845 or 4847
Fax No.: (602) 283-5765

PROJECT START, COMPLETION DATE, AND CONSTRUCTION COST:

PHASE 1

Project Start Date: February 08, 1993
Project Completion Date: April 13, 1993

PHASE 2

Project Start Date: August 09, 1993
Project Completion Date: August 13, 1993

COST:

Phase 1:
Construction.....$741,423.20
Paleontological Salvage
and Monitoring.....$16,011.00
Phase 2:
Construction.....$28,119.00

TOTAL $785,553.20

NARRATIVE DESCRIPTION OF PROJECT WORK

Project Background/General Information

The purpose of the Cameron AML Project I was to backfill six abandoned Uranium surface mines to remove the hazards associated with dangerous highwalls, polluted water being used for agricultural purposes, and the low-level radioactivity emitted by the remaining mine waste piles.

The Cameron area was intensively explored for uranium in the 1950's and 1960's, resulting in the discovery of over 100 radioactive occurrences. Of these, 85 registered some production of Uranium ore. Ten of these mines were on private or state-owned lands, meaning the remaining 75 inactive uranium mines are on the Navajo Nation's land in the Cameron area. Of the 75, around half (36) are planned for reclamation. This project (the first in the Cameron AML district) addressed six mines.

The six mines, NA-0105a,b, NA-0113, NA-0123, NA-0125, NA-0141, and NA-0148, in this project represented a total of 101 disturbed acres. The work took 10 1/2 weeks to complete.

The Cameron AML Project No. 1 occupies part of the broad valley between the Ward Terrace and the East Kaibab Monocline, in North-central Arizona. The area is north and east of the Little Colorado River, which is ephemeral in this reach. The river runs from the southeast to the northwest in this reach.

The area is approximately 24 miles east of the Grand Canyon, and 50 miles north of Flagstaff. The elevation is around 4200 feet above sea-level, and local relief in the district seldom exceeds 100 feet. The area is in the rain shadow of the San Francisco Peaks, the Coconino and Kaibab plateaus, and the Mogollon Rim, resulting in an annual rainfall is approximately 5.13 inches.

As a result of the low rainfall amounts, vegetation is very sparse, and developed soils are negligible or non-existent. Ground surface consists mainly of weathered rock (shale) outcroppings, resistant rock (sandstone) outcroppings, eolian dune sands, and alluvial deposits in ephemeral washes. Most of the surface material around the actual pits is heavy clay, weathered from the shale of the Chinle Formation.

Some native grasses are established in the eolian sands, and the washes have been colonized by two exotic invader species, i.e. tamarisk and camelthorn.

Scope of Work

The work included backfilling six uranium mine pits using 40 acres of uranium mining waste and stock piled low-grade ore, removing 4 ponds of polluted water being used for agricultural purposes, removing 6200 feet of dangerous highwall, and providing 2 replacement ponds for livestock and wildlife use, and repairing and cleaning and existing earthen stock tank.

The backfilling operation consisted of selective handling of

the backfilling material, mine waste piles and the stock piled ore. Material that exceeded radiation measurements of 50 micro roentgens per hour (uR/hr) or 25 pico-curies per gram (pCi/g) of Radium-226 in soil above background radiation measurements was placed near the bottom of the pits, then covered by backfill material that measured less than the above mentioned measurements. The selective handling was be based on radiological surveys of the sites.

Paleontological resources were represented by various fragments of fossilized material in the waste piles of the mines; therefore, the Museum of Northern Arizona was contracted to monitor and salvage fossil remains that were identified in a paleontological survey report for this project. The paleontological survey, also, outlined mitigation measures including the salvaging and monitoring during the earth moving portion of the construction.

ACCOMPLISHMENTS

This project work resulted in exemplary reclamation of land and water resources adversely affected by abandoned mine problems and is recognized as a model for the Navajo Nation non-coal (uranium) AML reclamation efforts for 1993 and future reclamation efforts.

The project was unique in a sense that up to this time non-coal reclamation undertaken by Navajo AML Reclamation Department (NAMLRD) was done in-house and this was the first totally contracted reclamation construction project. In addition to eliminating high priority AML hazards such as the elimination of polluted water, highwalls, soil erosion and sedimentation, and radioactive stockpiled low grade ore and wastepiles, the project is a model for other contracted reclamation projects. The contracting ofsuch projects involve the cooperation of various Navajo Nation agencies/departments (Navajo Business Regulatory, Navajo Tax Commission, Navajo Water Resources, etc.), NAMLRD personnel, monitoring (Museum of Northern Arizona) personnel, and the contractor.

In its efforts to blend the reclaimed sites in with the surrounding topography and land uses, NAMLRD put in replacement ponds at two sites, and repaired and maintained an existing water catchment structure. The replacement ponds were put in to replace the water resource for wildlife and livestock that was removed in the reclamation process. The existing water structure that was repaired and maintained was located within close proximity to two reclaimed sites; the two sites were scheduled to have replacement ponds put in, however, it was deemed more effective to repair and maintain an existing water catchment than to build new ones.

Since the project sites are located in a dry high desert environment and the major soil type in the area being clayey, active revegetation was not attempted due to it being fiscally espensive and timewise lengthy. The reclaimed sites have been left to the forces of nature to do its wonders. In the lands adjacent

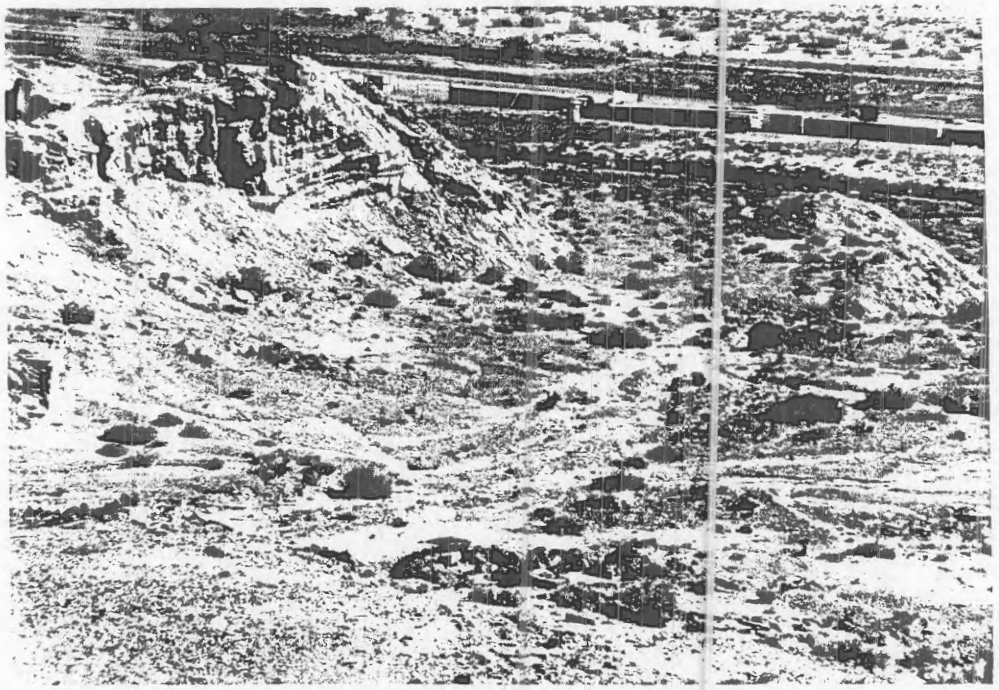
to the reclaimed areas, natural vegetation is most prominent in areas where sand has been deposited in low places and in sheltered areas against wind erosion. The slopes of the reclaimed sites have been reduced to 5 to 1 slopes where attainable and in other places the slopes have been blended with the natural slopes and left as rubbly as possible. This is all to reduce water erosion and to enhance the chance of eolian deposition of soils.

Another unique aspect of Cameron AML Project No. 1, was the paleontological resources found with in the project areas which required paleontological salvaging and monitoring during construction. The salvaging and monitoring resulted in recovery of a diverse collection of vertebrate fossils (including the partial skull of a metoposaur amphibian), previously undescribed fossil (a plant with strap-like or frond?) occurrence, a skull of a large dicynodont reptile, and numerous other fossilized plant and vertebrate specimens. The monitoring portion of the construction involved a close working relationship between the contractor and his heavy equipment (641 CAT scrapers with a capacity of 44 cubic yards per load, D-9 and D-10 dozers, motor graders, and water trucks) operators and the paleontologist on foot looking for uncovered fossils after a pass by a scraper or dozer.

Cameron AML Project No. 1 has removed the unsightly features of AML lands that impeded the scenic vistas which are part of the Painted Desert and has removed the dangerous AML features. In time, with the help of Mother Nature, the reclaimed land will be again consistent with the surrounding land forms and its uses, and the vistas of the scenic area has been restored.

COLOR PHOTOGRAPHS

Color photographs showing Cameron AML Project No. 1 activities and project areas are attached. Before and after photographs are included. Video documentation is available upon request.



PHOTOGRAPH NO. 1: NA-0155a - Henry Sloan No. 1 - Lower terraced rimstrip with roadside vendor stands along US 89 in background.

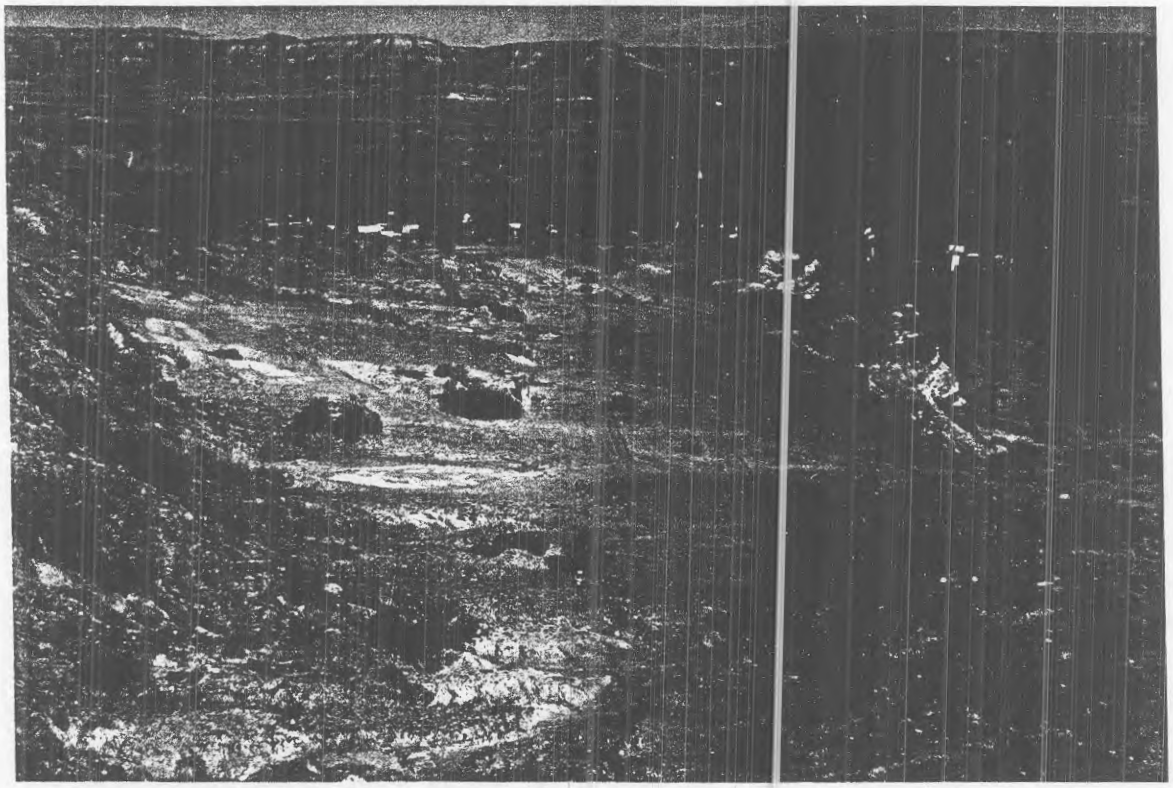


Photo No. 08

PHOTOGRAPH NO. 2: NA-0155a Henry Sloan No. 1 - Upper terraced rimstrip.

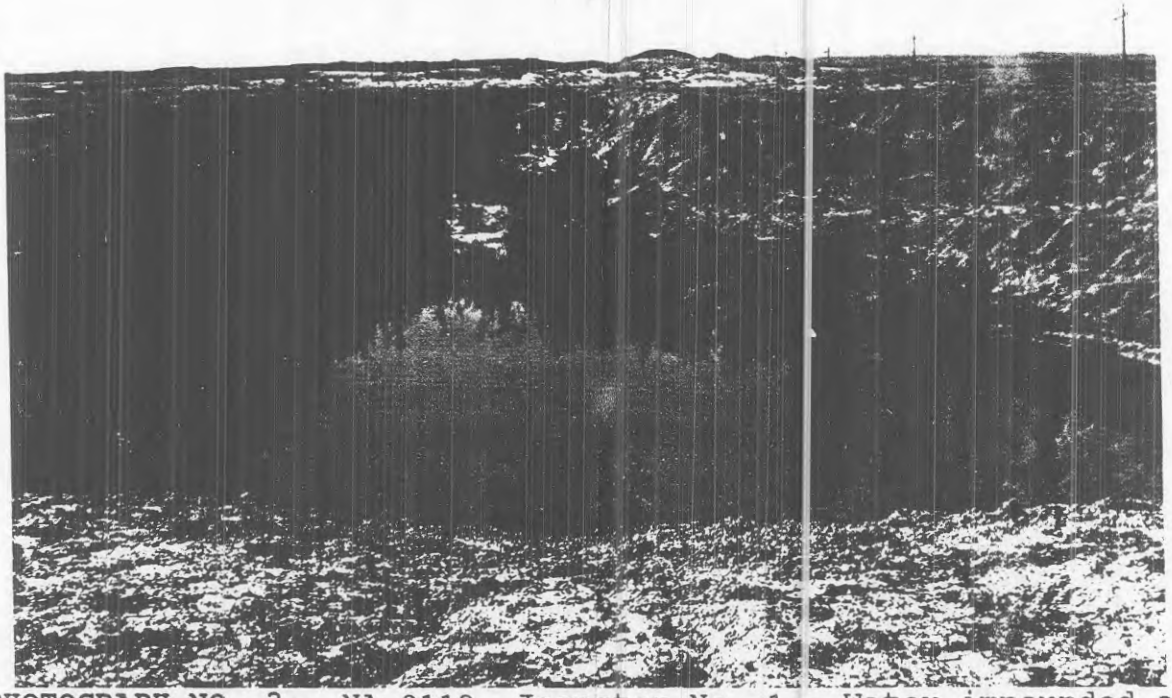


Photo #11

PHOTOGRAPH NO. 3: NA-0113 Jeepster No. 1 - Water impounded and tamerisks growing in open pit.

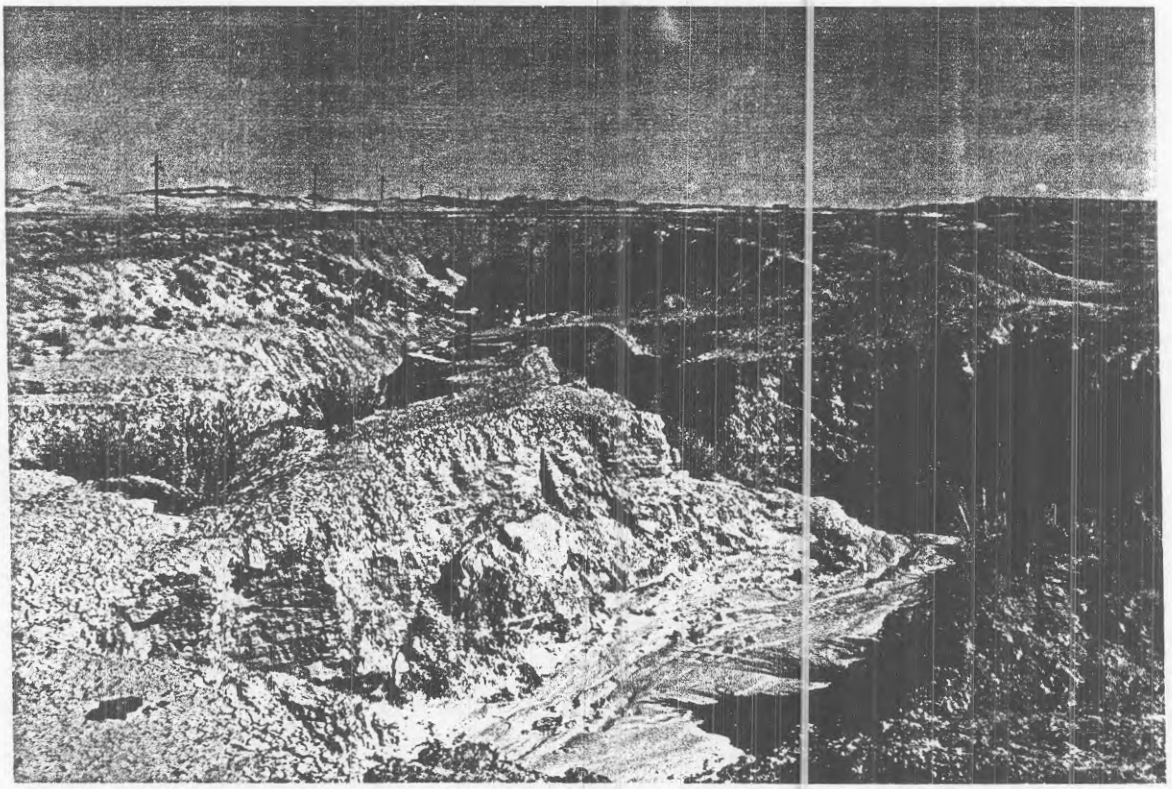


Photo #08

PHOTOGRAPH NO. 4: NA-0113 Jeepster No. 1 - Photograph shows open pit and erosion caused by runoff from wastepile into pit.

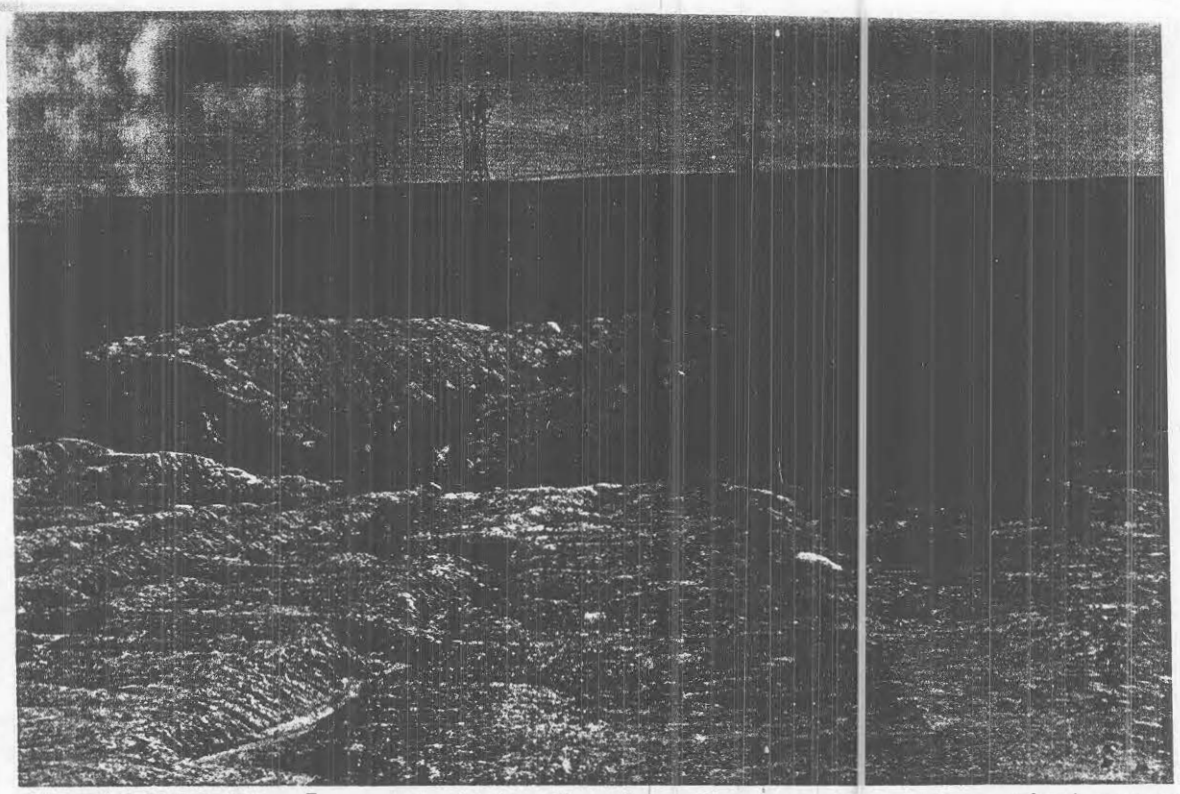
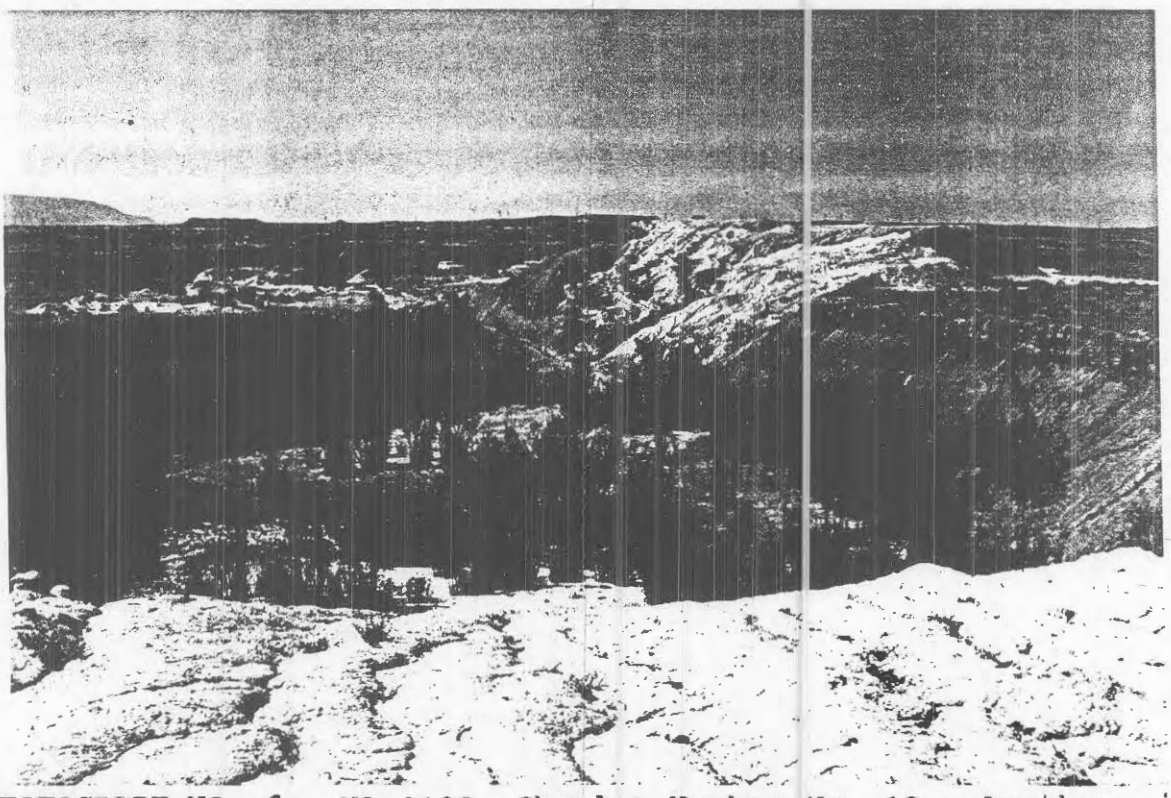


Photo #04

PHOTOGRAPH NO. 5: NA-0123 Charles Huskon No. 19 - Photograph showing open pit with home in the background.



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PHOTOGRAPH NO. 6: NA-0123 Charles Huskon No. 19 - Another view (looking to the west) of pit. US 89 is in the background.

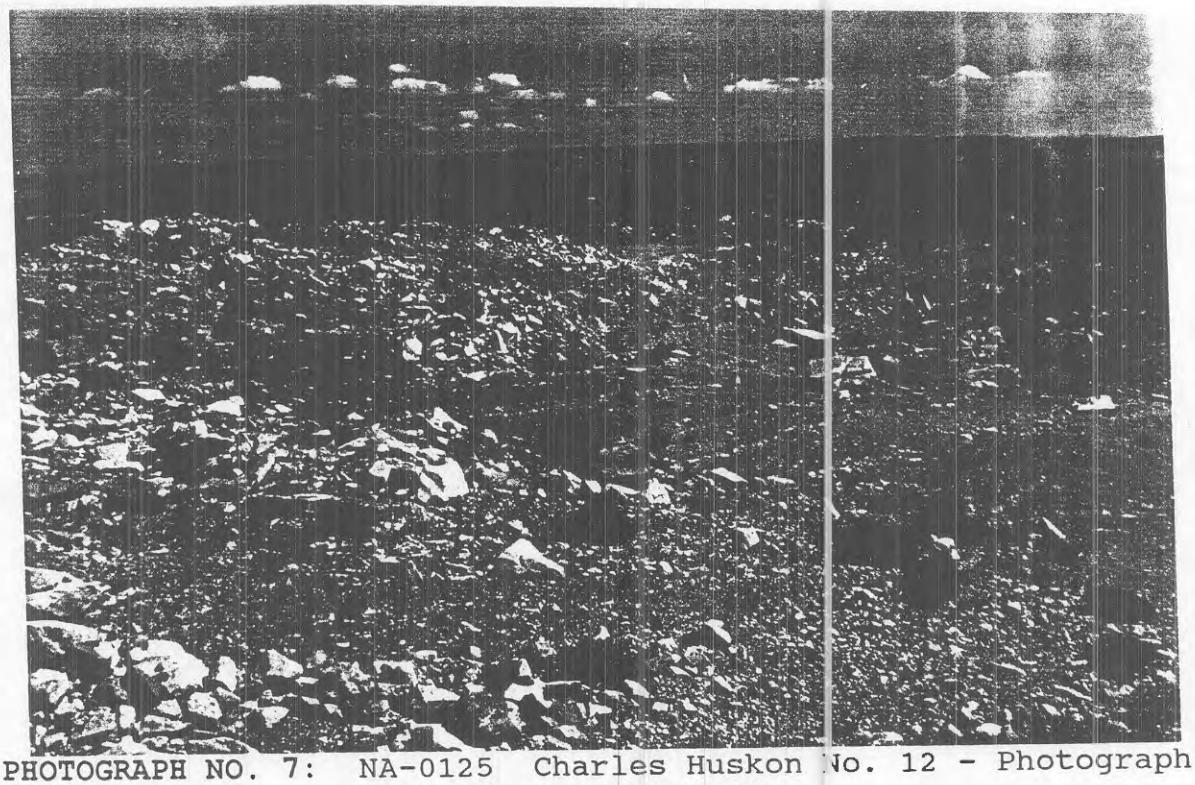


Photo #24

PHOTOGRAPH NO. 7: NA-0125 Charles Huskon No. 12 - Photograph shows site with homes in the background.

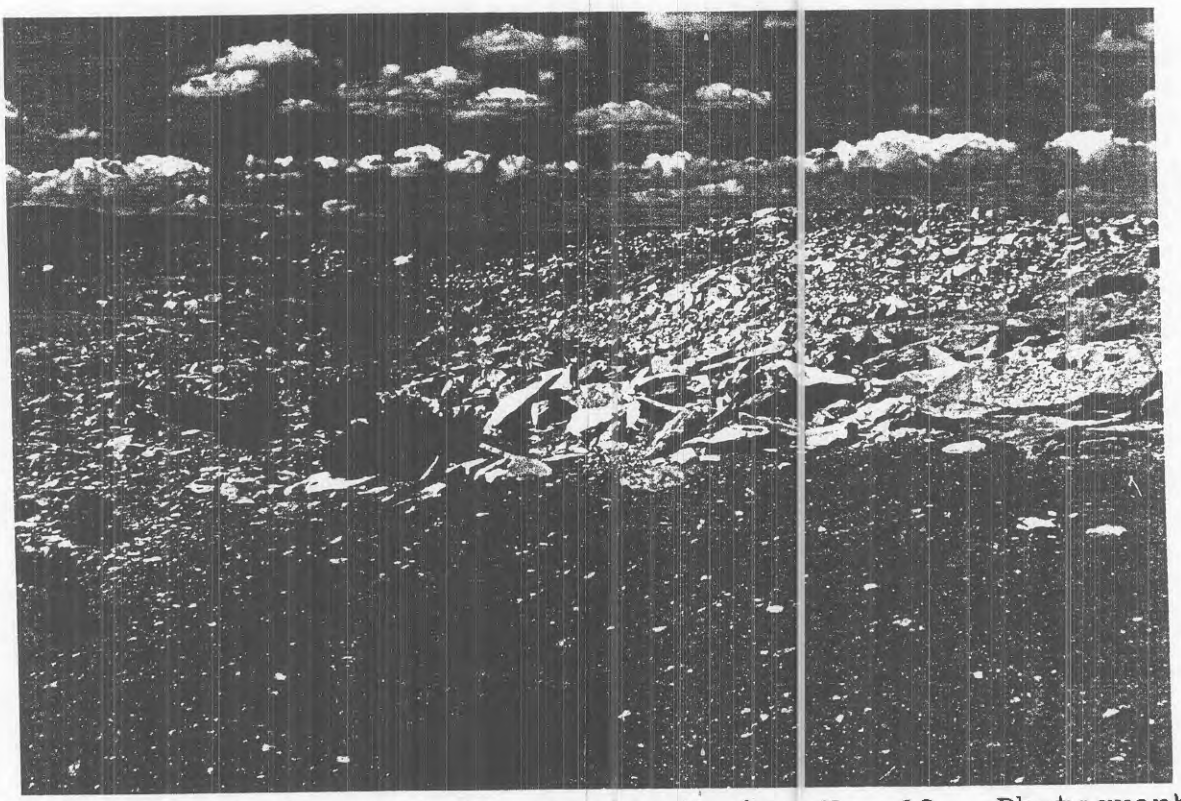


Photo #20

PHOTOGRAPH NO. 8: NA-0125 Charles Huskon No. 12 - Photograph shows site looking to the west.

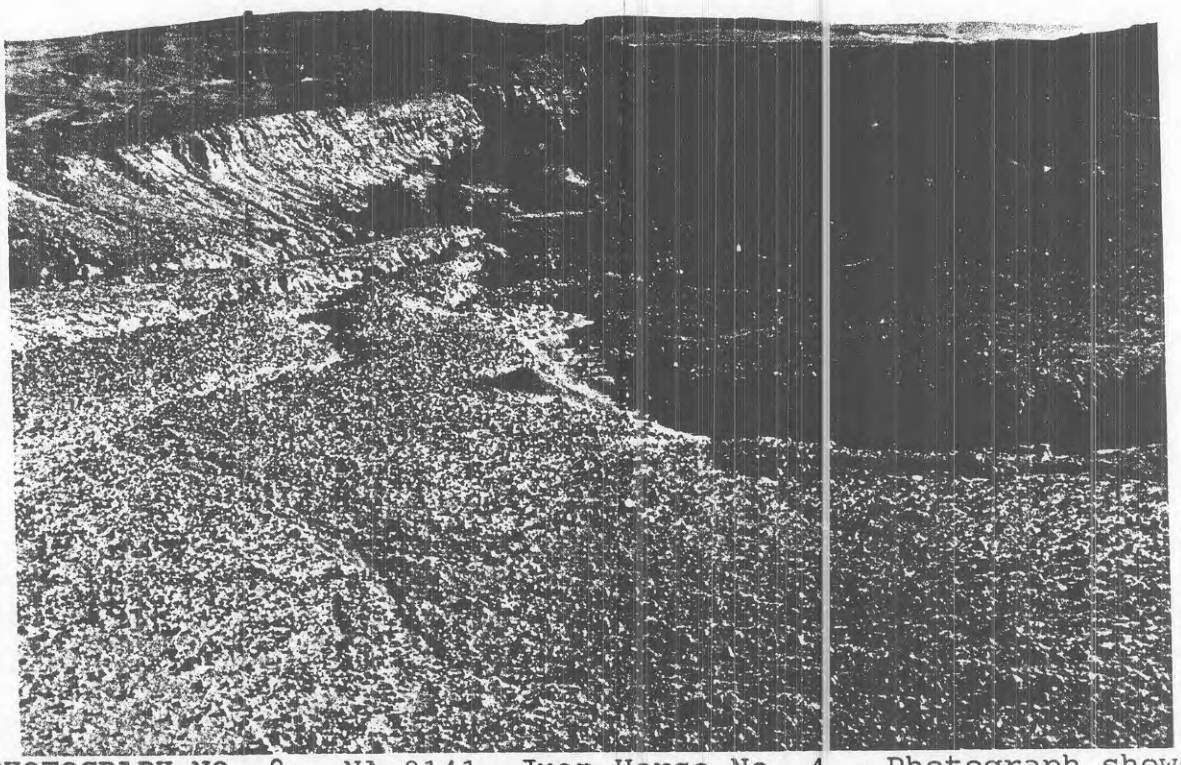


Photo #10

PHOTOGRAPH NO. 9: NA-0141 Juan Horse No. 4 - Photograph shows open pit, high walls, and wastepiles on left and right.

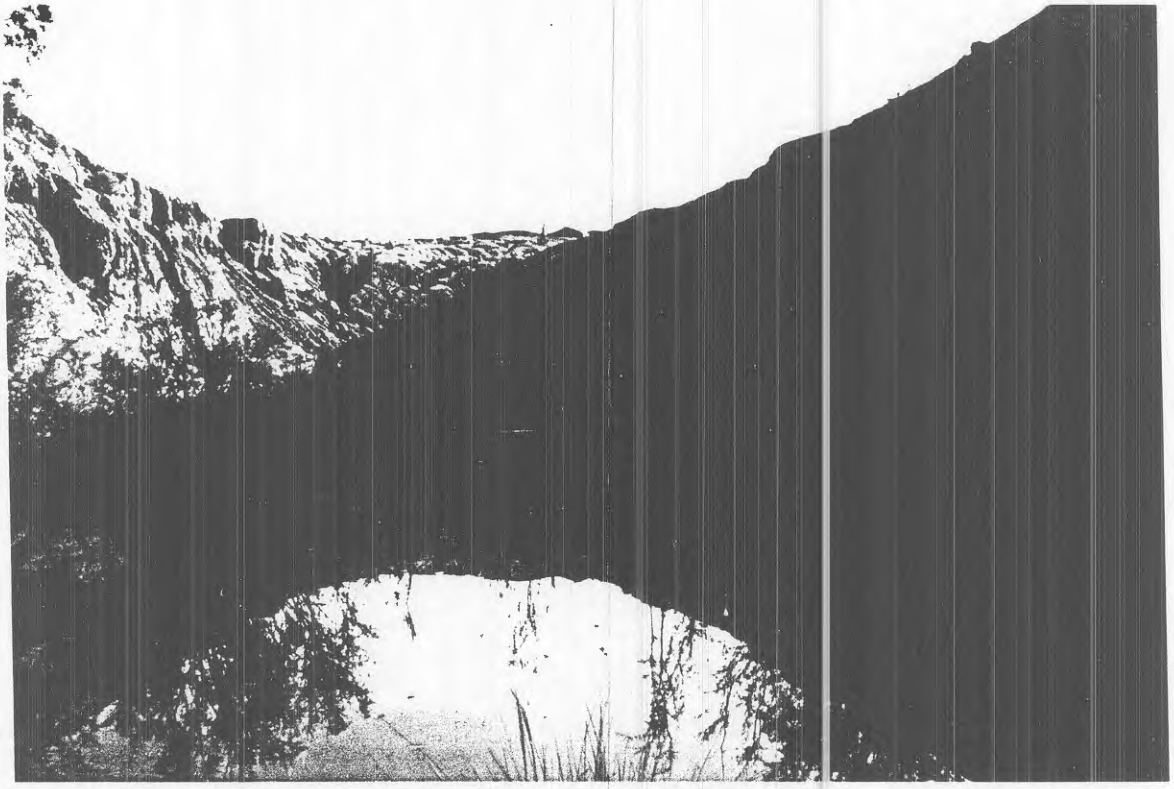
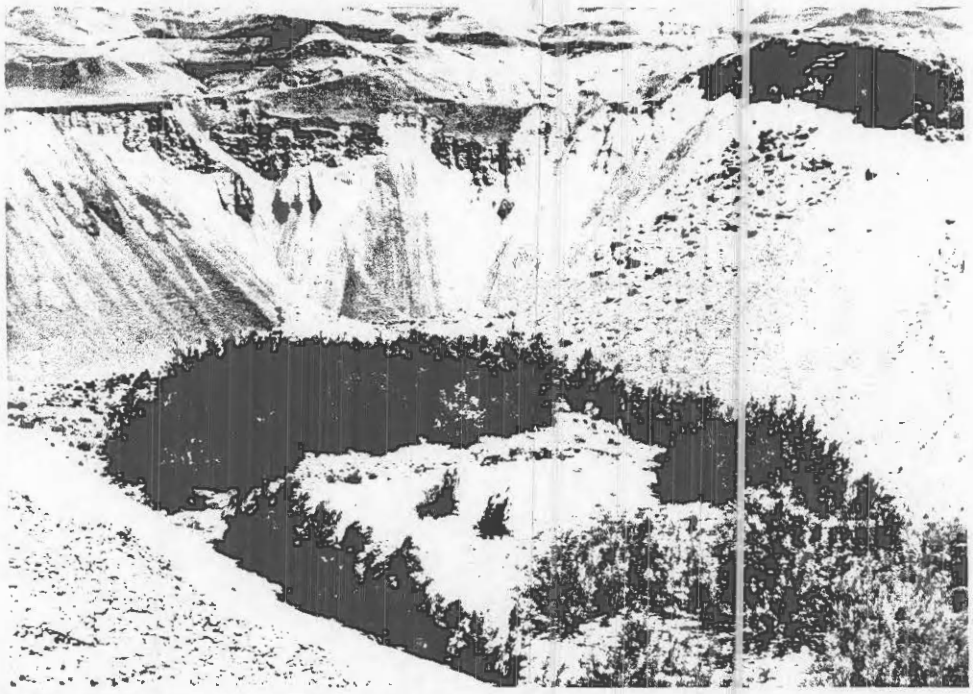
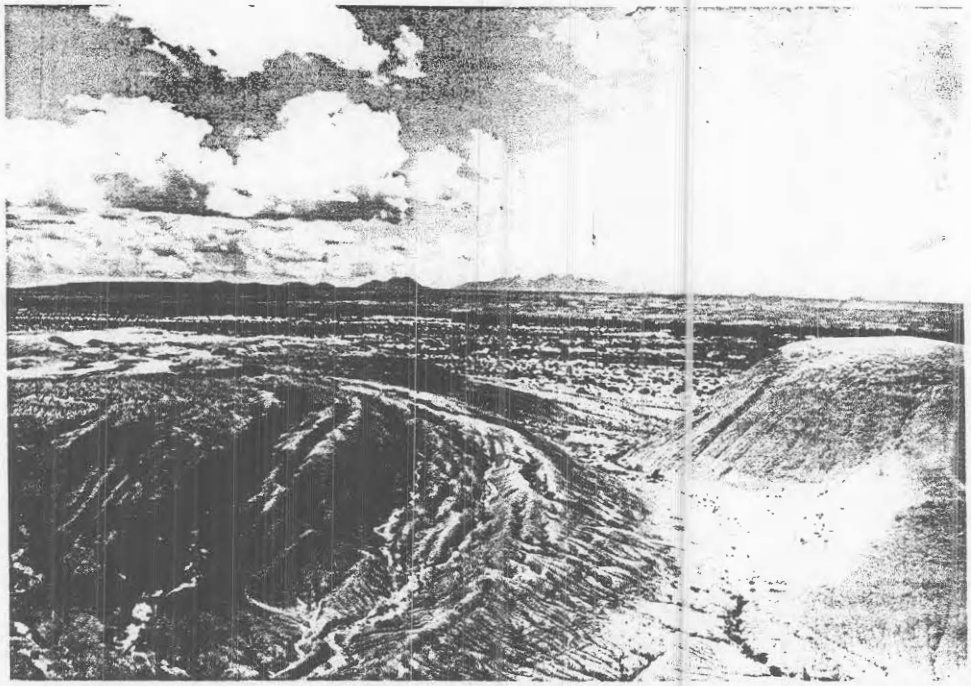


Photo #14

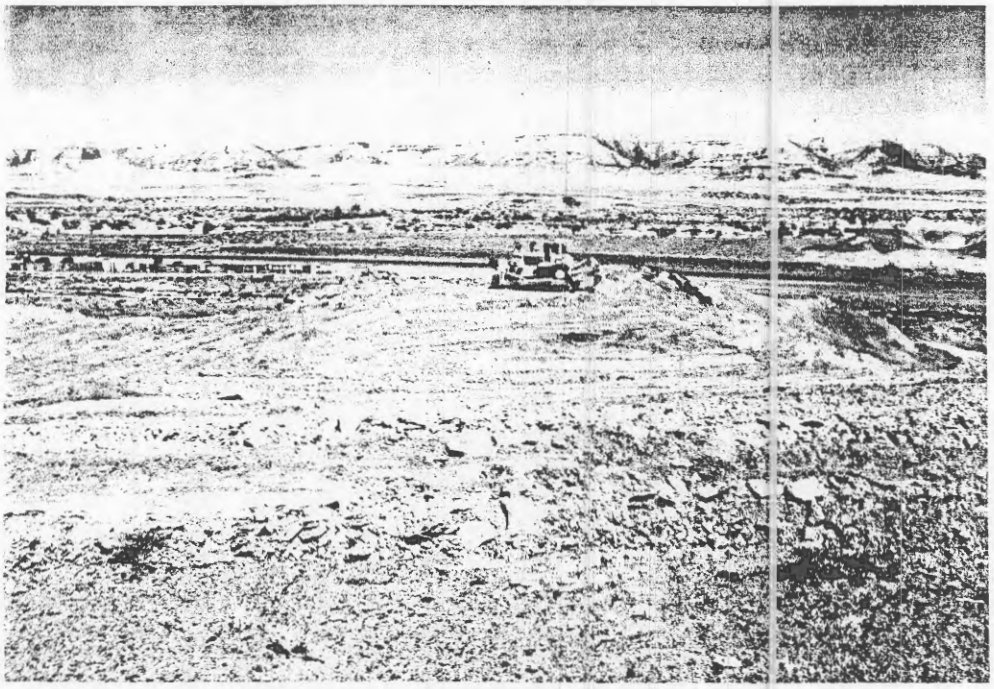
PHOTOGRAPH NO. 10: NA-0141 Juan Horse No. 4 - Photograph of highwalls and impounded water at the bottom of the pit.



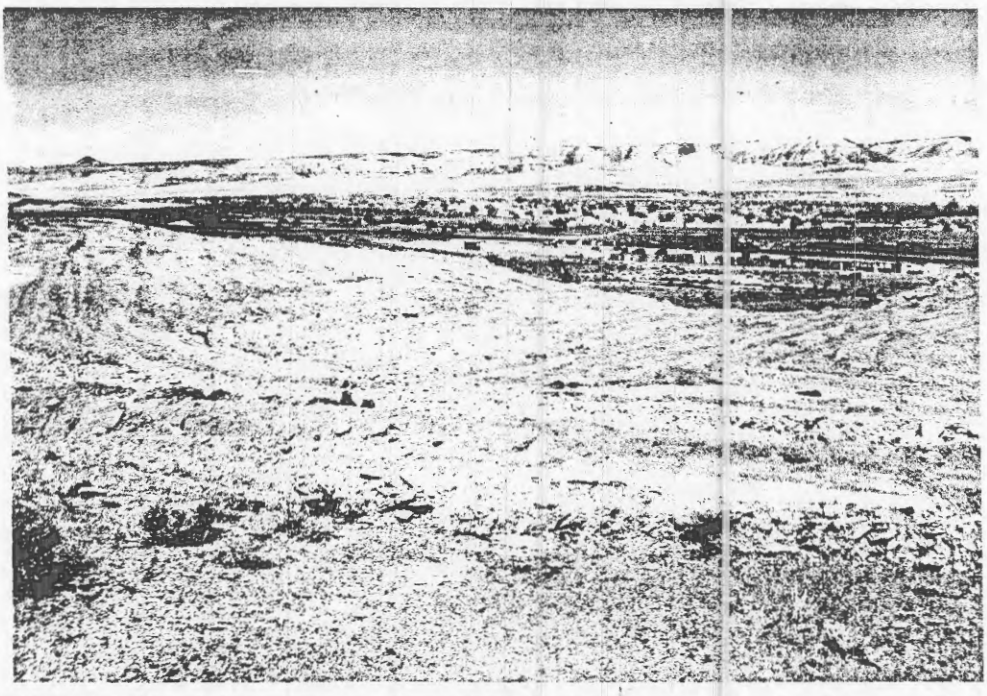
PHOTOGRAPH NO. 11: NA-0148 Jack Huskon No. 3 - Photograph shows open pit with impounded water and highwalls. Background is badlands topography associated with the Painted Desert.



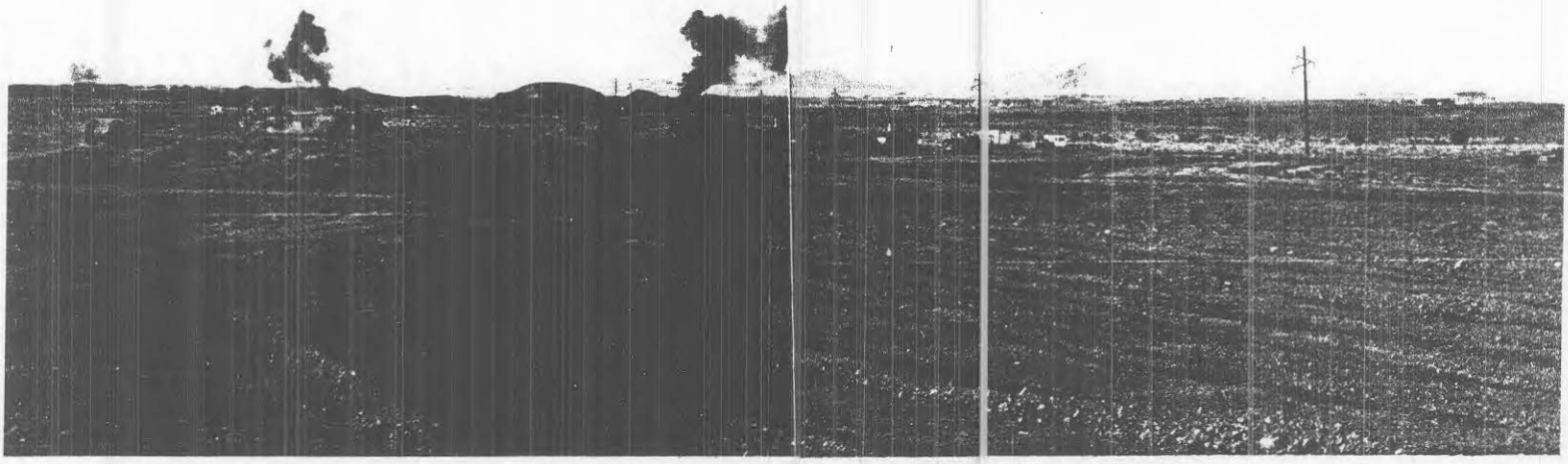
PHOTOGRAPH NO. 12: NA-0148 Jack Huskon No. 3 - photograph shows erosion in wastepile caused by runoff. In the background is the San Fransico Peaks, approx. 45 miles away and nearer is the Little Colorado River.



PHOTOGRAPH NO. 13: Work at NA-0155a.



PHOTOGRAPH NO. 14: Near complete work at NA-0155a; Slopes and highwalls have been reduced.



PHOTOGRAPH NO. 15: Work nearing completion at NA-0113.

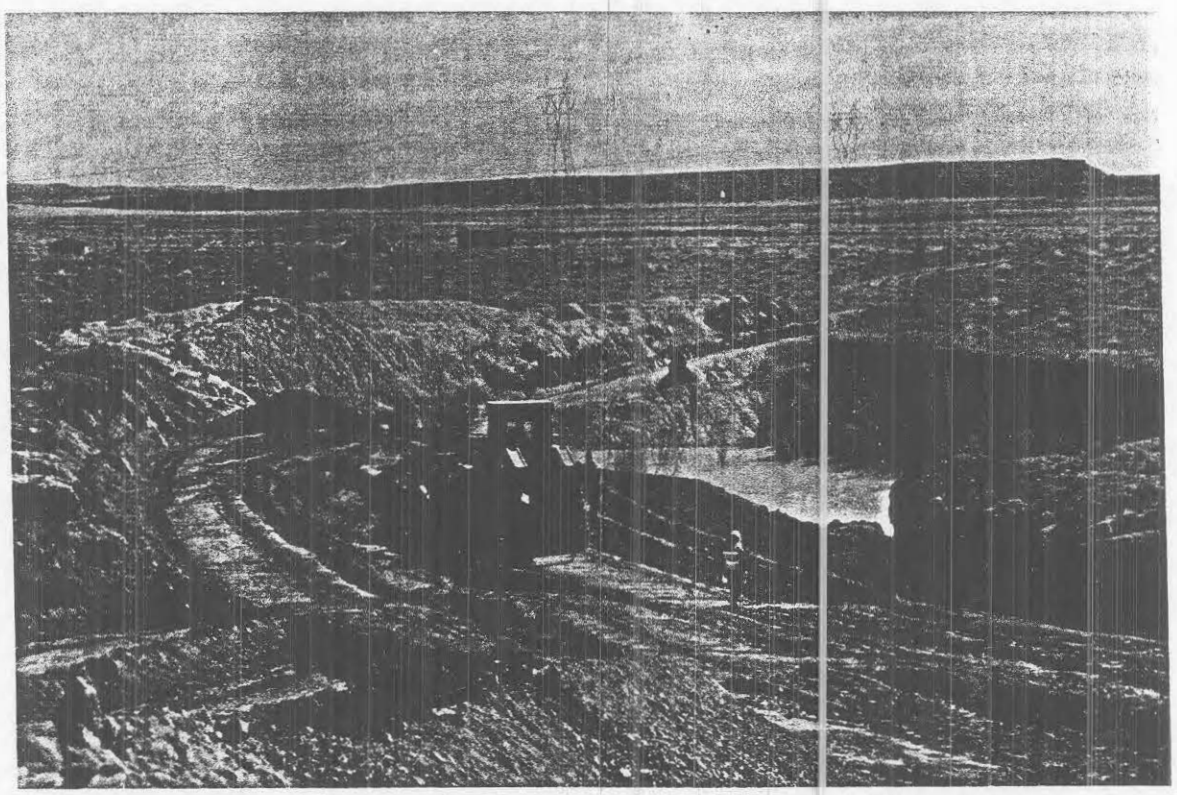
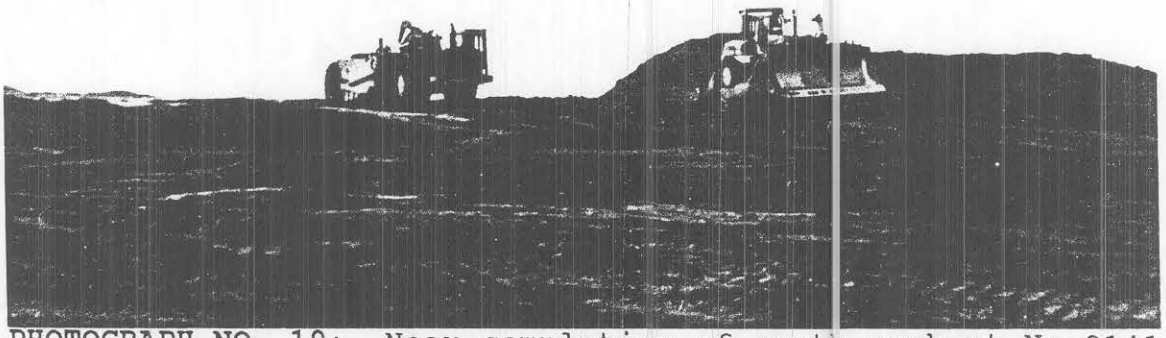


Photo #26

PHOTOGRAPH NO. 16: Work ongoing at NA-012[illegible] with Paleontologist (in orange vest) monitoring site work.

Photo #4



PHOTOGRAPH NO. 19: Near completion of earth work at Na-0141; Photograph shows D-10 dozer and 44 cubic yard scraper.

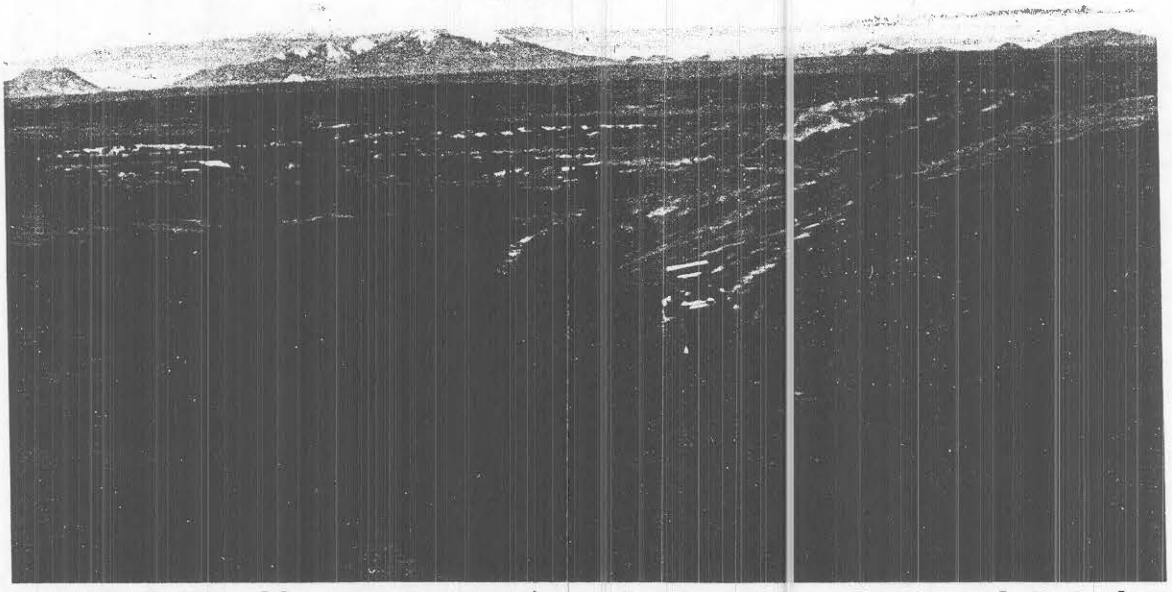


Photo #2

PHOTOGRAPH NO. 20: Work ongoing at NA-0148; D-10 and D-9 dozers reducing highwalls for access into pit.

Photo #25

PHOTOGRAPH NO. 21: Paleontologists (Patty Lutrell and Randy Kirby) preparing skull of large dicynodont reptile for removal.

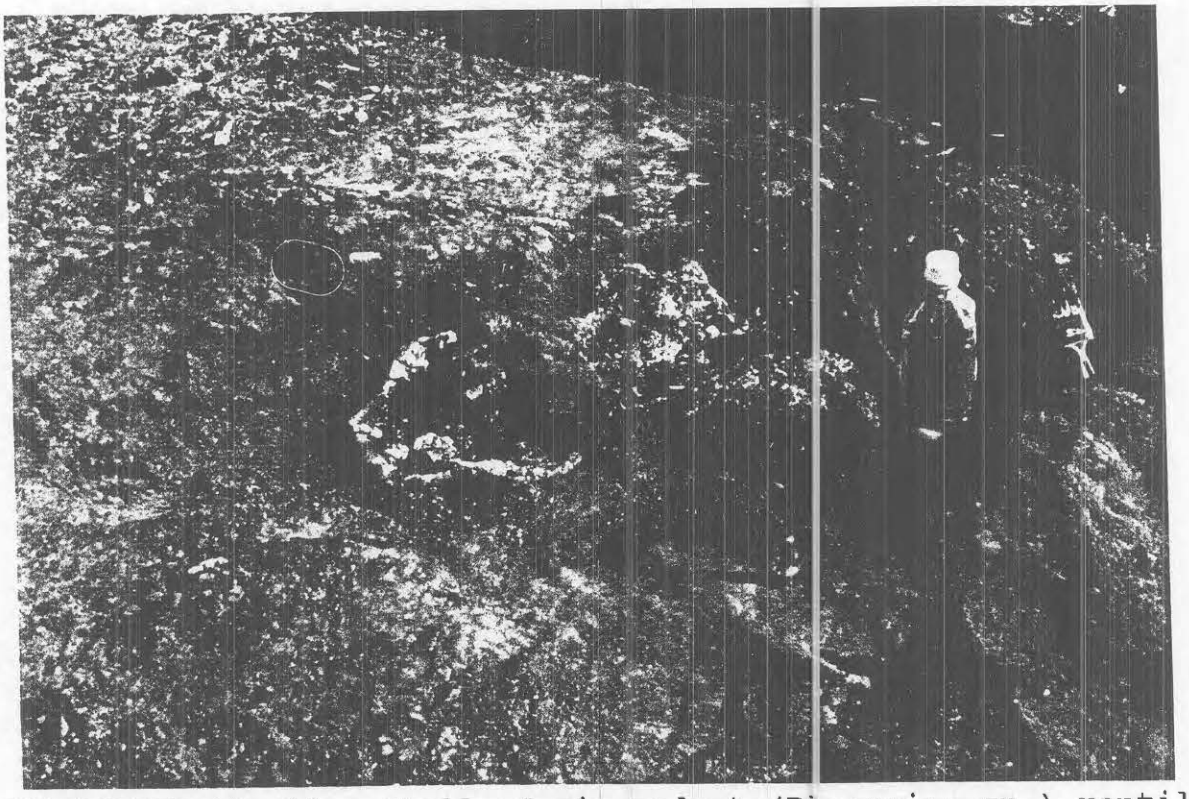


Photo No. 22

PHOTOGRAPH NO. 22: Skull of Dicynodont (Placerias sp.) reptile in situ.

Photo #22

PHOTOGRAPH NO. 17: Work ongoing at NA-0125 with Paleontologists inspecting for fossil material in exposed earth.

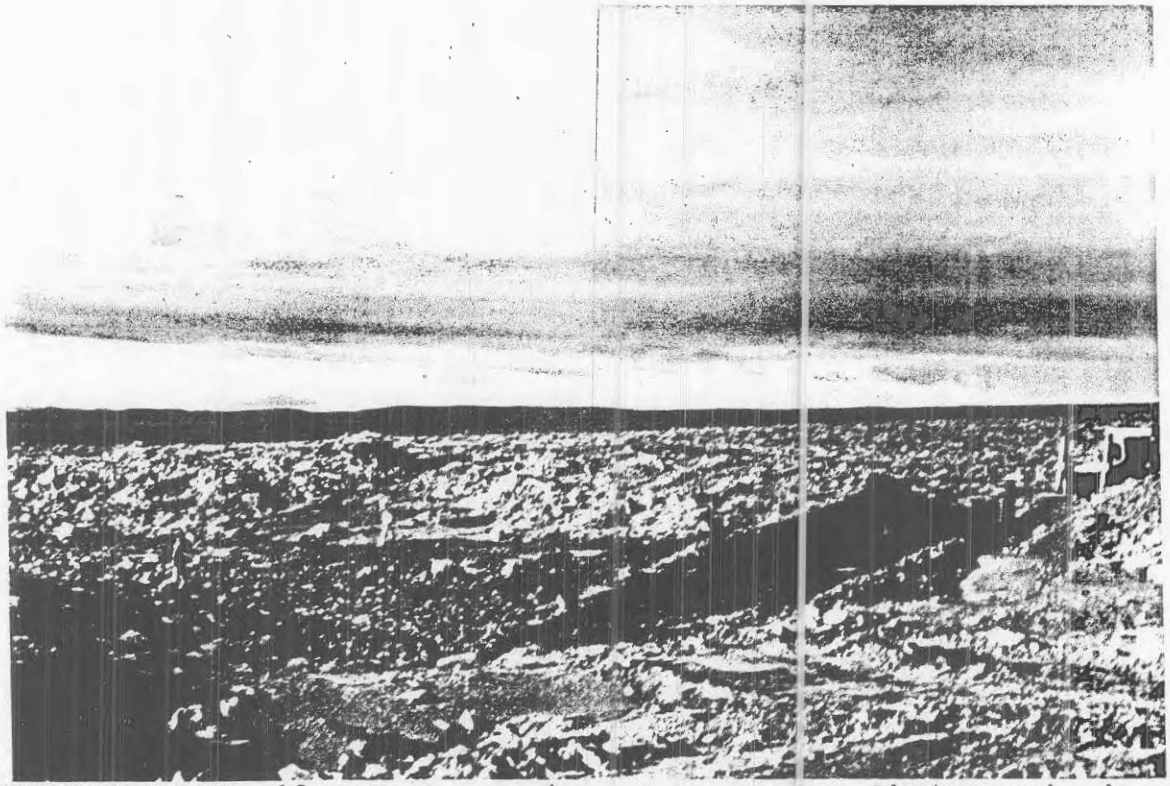


Photo #3

PHOTOGRAPH NO. 18: Work ongoing at NA-0125; Photograph shows paleontologists and D-10 Dozer